

What is claimed is:

1. A vaporizer for CVD comprising:

a dispersing portion dispersing a plurality of raw-material solutions in a carrier gas in fine particulate or misty forms;

a plurality of paths for the plurality of raw-material solutions, each of said plurality of paths supplying the plurality of raw-material solutions to said dispersing portion separately from one another;

a path for the carrier gas, said path supplying the carrier gas to said dispersing portion separately from the plurality of raw-material solutions;

a vaporizing member vaporizing the plurality of raw-material solutions dispersed by said dispersing portion;

an orifice connected to said vaporizing member and said dispersing portion, said orifice introducing the plurality of raw-material solutions dispersed by said dispersing portion into said vaporizing member; and

a cleaning mechanism cleaning at least one of said dispersing portion, said orifice and said vaporizing member.

2. The vaporizer for CVD according to claim 1, further comprising a monitoring mechanism for monitoring a pressure of the carrier gas.

3. A vaporizer for CVD comprising:

a dispersing portion dispersing a plurality of raw-material solutions in a carrier gas in fine particulate or misty forms;

a plurality of paths for the plurality of raw-material solutions, each of

said plurality of paths supplying the plurality of raw-material solutions to said dispersing portion separately from one another;

a path for the carrier gas, said path supplying the carrier gas to said dispersing portion separately from the plurality of raw-material solutions;

a monitoring mechanism for monitoring a pressure of the carrier gas;

a vaporizing member vaporizing the plurality of raw-material solutions dispersed by said dispersing portion; and

an orifice connected to said vaporizing member and said dispersing portion, said orifice introducing the plurality of raw-material solutions dispersed by said dispersing portion into said vaporizing member.

4. A vaporizer for CVD comprising:

a plurality of pipes for a plurality of raw-material solutions, each of said plurality of pipes supplying the plurality of raw-material solutions separately from one another;

a pipe for a carrier gas, said pipe being provided in a manner covering outwards of said plurality of pipes, while said pipe allowing the pressurized carrier gas to flow thereinside and the outward of each of said plurality of pipes;

an orifice provided on a leading end of said pipe for the carrier gas, said orifice being spaced away from leading ends of said plurality of pipes for the plurality of raw-material solutions;

a vaporizing tube connected to said leading end of said pipe for the carrier gas, said vaporizing tube being connected to the inside of said pipe for the carrier gas via said orifice;

a cleaning mechanism cleaning at least one of said leading end of said

pipe for the carrier gas, said orifice, said vaporizing tube; and  
a heating means for heating said vaporizing tube.

5. The vaporizer for CVD according to claim 4, further comprising a monitoring mechanism for monitoring a pressure of the carrier gas in an inside of said pipe for the carrier gas.

6. The vaporizer for CVD according to claim 4 or 5, wherein said cleaning mechanism cleans said leading end of said pipe for the carrier gas and said orifice by supplying at least a solution thereto.

7. A solution-vaporization CVD apparatus comprising said vaporizer for CVD according to any one of claims 1 to 6.

8. A solution-vaporization CVD apparatus comprising at least one vaporizer for CVD according to any one of claims 4 to 6, and a reaction chamber connected to said vaporizer,

wherein a deposition is carried out with the plurality of raw-material solutions used, the plurality of raw-material solutions being vaporized by said vaporizing tube.

9. The solution-vaporization CVD apparatus according to claim 8, wherein:

the solution-vaporization CVD apparatus is equipped with said plurality of vaporizers for CVD;

some of said plurality of vaporizers for CVD are respectively in a cleaned condition cleaned by said cleaning mechanism, while others thereof are respectively in operated condition; and

the plurality of vaporized raw-material solutions are continuously supplied to said reaction chamber by swapping said plurality of vaporizers for CVD in the operated conditions for those in the cleaned conditions as time advances.

10. A vaporization method for CVD comprising processes of:

supplying a plurality of raw-material solutions and a carrier gas to a dispersing portion separately from one another;

mixing the plurality of raw-material solutions and the carrier gas by the dispersing portion and dispersing the plurality of raw-material solutions in the carrier gas in fine particulate or misty forms;

vaporizing the raw-material solutions by adiabatic expansion immediately after dispersing; and

cleaning at least one of the dispersing portion and an area for vaporizing the raw-material solutions.

11. A vaporization method for CVD, comprising processes of:

supplying a plurality of raw-material solutions and a carrier gas to a dispersing portion separately from one another;

mixing the plurality of raw-material solutions and the carrier gas by the dispersing portion, and dispersing the plurality of raw-material solutions in the carrier gas in fine particulate or misty forms;

vaporizing the raw-material solutions by adiabatic expansion immediately after dispersing;

monitoring a pressure of the carrier gas while vaporizing the raw-material solutions, and terminating the supply of the raw-material solutions to the dispersing portion upon observing that the pressure of the carrier gas exceeds a predetermined value;

and cleaning at least one of the dispersing portion and an area for vaporizing the plurality of raw-material solutions.

12. The vaporization method for CVD according to claim 11, wherein:  
said process for cleaning is one for cleaning at least one of the dispersing portion and the area for vaporizing the plurality of raw-material solutions by supplying a solvent and the carrier gas thereto; and

the pressure of the carrier gas is monitored during said process for cleaning so that the supply of the solvent is terminated upon observing that the pressure of the carrier gas is turned less than or equal to the predetermined value so as to terminate said process for cleaning.

13. The vaporization method for CVD according to claims 11 or 12, wherein the solvent for cleaning and solvents contained in the plurality of raw-material solutions are homogeneous.

14. The vaporization method for CVD according to any one of claims 11 to 14, wherein the solvent for cleaning is one or a mixture of those selected from a group consisting of ethyl cyclohexane, n-hexane, benzene, toluene, octane,

and decane.